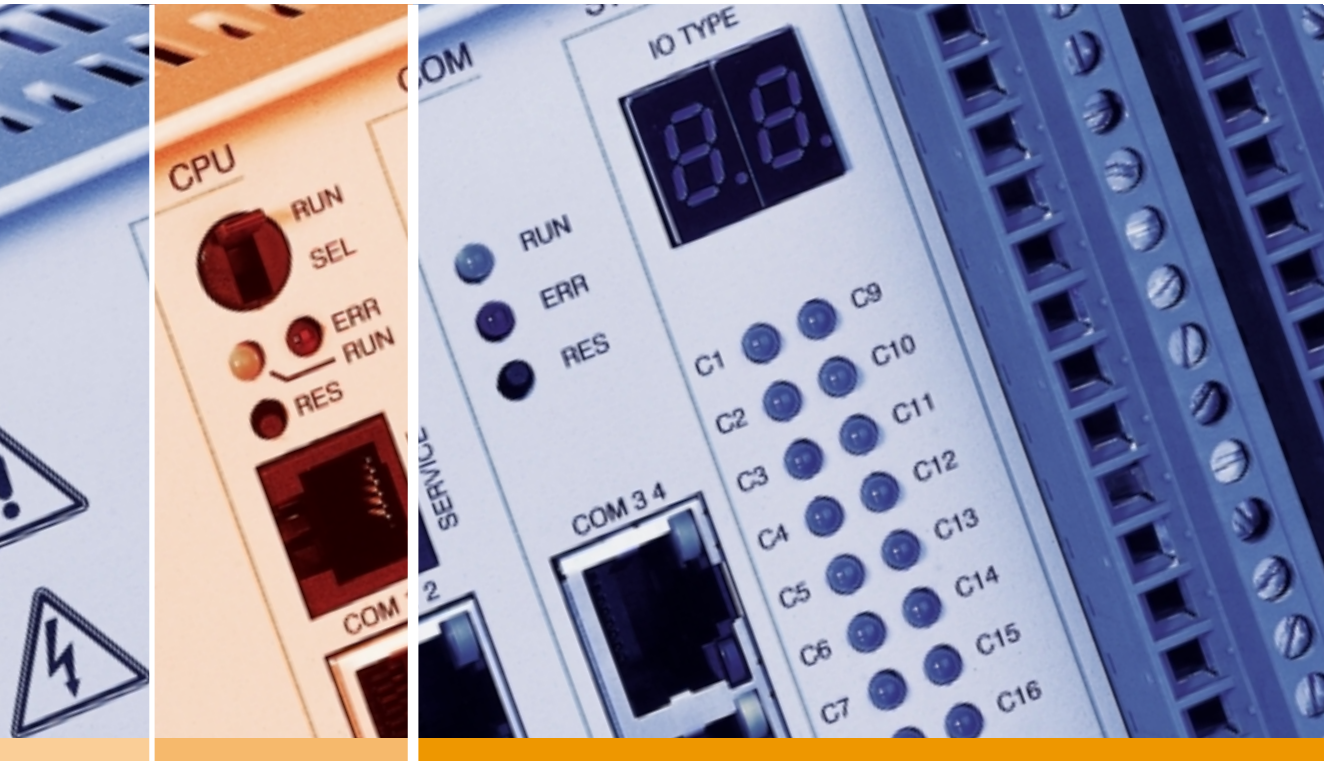


Telecontrol and Automation Systems

Telecontrol and Automation Systems

IDS telemetry and automation systems are characterized by highest electro-magnetic immunity, powerful PLC-functionality and multiple data transmission possibilities.
Different structures with a uniform software platform offer the possibility to build open and scaleable telemetry, automation and communication networks. Engineering can be quickly and easily done via a graphic tool.

IDS telecontrol and automation units are designed for the supply and disposal industry, for industrial infrastructure applications and for transportation systems. In addition, they are used as field and station controllers in all voltage levels of electricity networks.

With a broad array of products the IDS telecontrol and automation technology meets all demands.

For extensive applications with complex communication structures the IDS 850 offers a modular, freely scaleable telemetry and automation unit. The modular telemetry and automation system IDS 650 is suitable for applications with a limited amount of information. For small sized tasks the IDS 640 units with its fixed data amount is the best choice. Compatibility between the product lines IDS 850, IDS 650 and IDS 640 is guaranteed within the telemetry and automation systems and to the IDS HIGH-LEIT control system.

The following table shows the differences between the systems:

System	IDS 850	IDS 650	IDS 640
Construction	6 HE-rack, modular	compact unit, modular	compact unit
Single-point signals 1)	typ.: 1.024/ max. 2.048	128 2)	16
Single-point commands 1)		128 2)	4
Analog Inputs		64 2)	4
Analog Outputs		16 2)	—
Serial ports	max. 64	max. 4	2
Network-interfaces	max. 9	max. 2	1

1) IDS 850, IDS 650 and IDS 640 also process double-point signals and commands
2) under consideration of combination possibilities and maximum system limitations

All systems have the following standard component fitting:

- power supply module with galvanic isolation of input and system voltage for different power feeds
- CPU with RISC-processors type PowerPC
- own floating point arithmetic and high-precision quartz oscillator
- real time clock, watch-dog timer, buffered Flash-RAM

- buffering of process information with dial-up and radio services, respectively in case of failure of communication path, in fixed time intervals or event-driven

Automatisation

The systems IDS50, IDS 650 and IDS 640 have an integrated soft PLC acc. to IEC 61131-3, which provides extensive capabilities for telemetry and inter communication.

In the entire communication network - also within complex, hierarchically structured telemetry networks - a direct and unrestricted access to the objects of the IEC 60870-5-101/104 standard is possible. Thus not only access to all object types and qualities, e.g. time stamp, quality attributes, is given but also the efforts for parameterization are significantly reduced.

There are various applications for the automation: volume control systems, hydro power plant automation, gas controller setting and control of water treatment plants.

For creation of PLC programs the languages defined in IEC 61131-3 are available:

- LD (ladder diagram)
- IL (instruction list)
- SFC (sequential function chart)
- FBD (function block diagram)
- CP (contact plan)
- ST (structured text)

Communication, Engineering and Diagnosis

Communication

The CPU modules of all types provide as per standard already 4 (IDS 850) respectively 2 (IDS 650/IDS 640) serial communication ports as well as one Ethernet port. Via the communication modules CC88A (IDS 850) and CC68A (IDS 650) the number of interfaces for each unit can easily be extended by 4 respectively 2 serial communication ports and one Ethernet port per module.

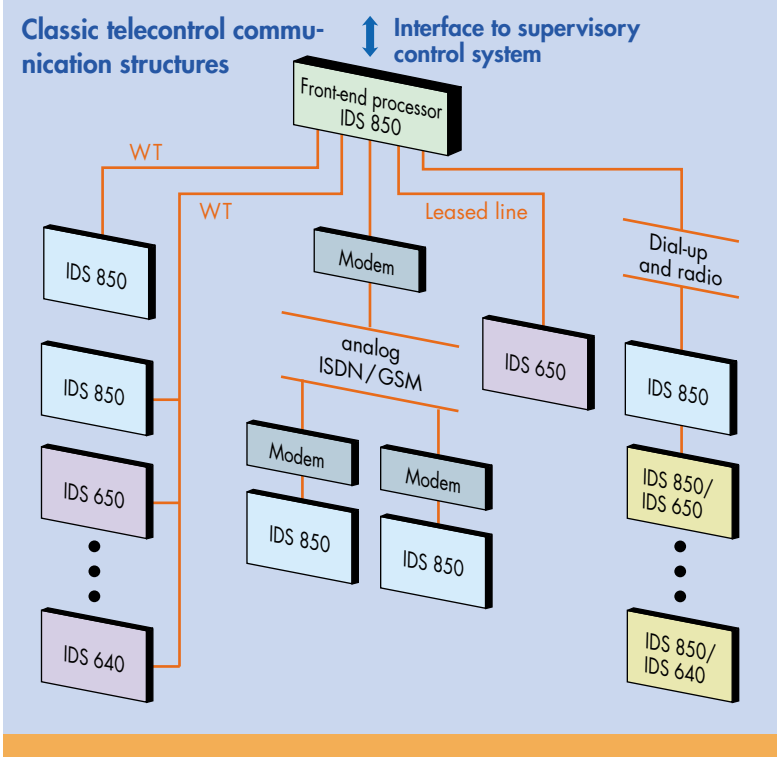
The standard modules support the following communication protocols:

- IEC 60870-5-101
- IEC 60870-5-103
- IEC 60870-5-104
- IEC 61850 (only IDS 650 and IDS 850)
- Modbus RTU
- Profibus DP (only IDS 850)
- IDS-protocol

Moreover, for IDS 850 a great number of proprietary protocols are available with additional communication modules including the emulation of the procedure to interface with a variety of third party systems. For the telemetry communication, for example, the protocol families AEG SEAB, Siemens SINAUT or TELEGYR TG 80x and for PLC communication Siemens 3964R protocols are supported. In total, IDS has realized more than 150 3rd party protocols.

The communication within the telemetry network is done per standard with the protocol IEC 60870-5-101/104 server and client via analog and digital leased lines as well as dial-up and radio connections. To connect stations which are difficult to reach also GSM, GPRS and UMTS data services can be used with special modems.

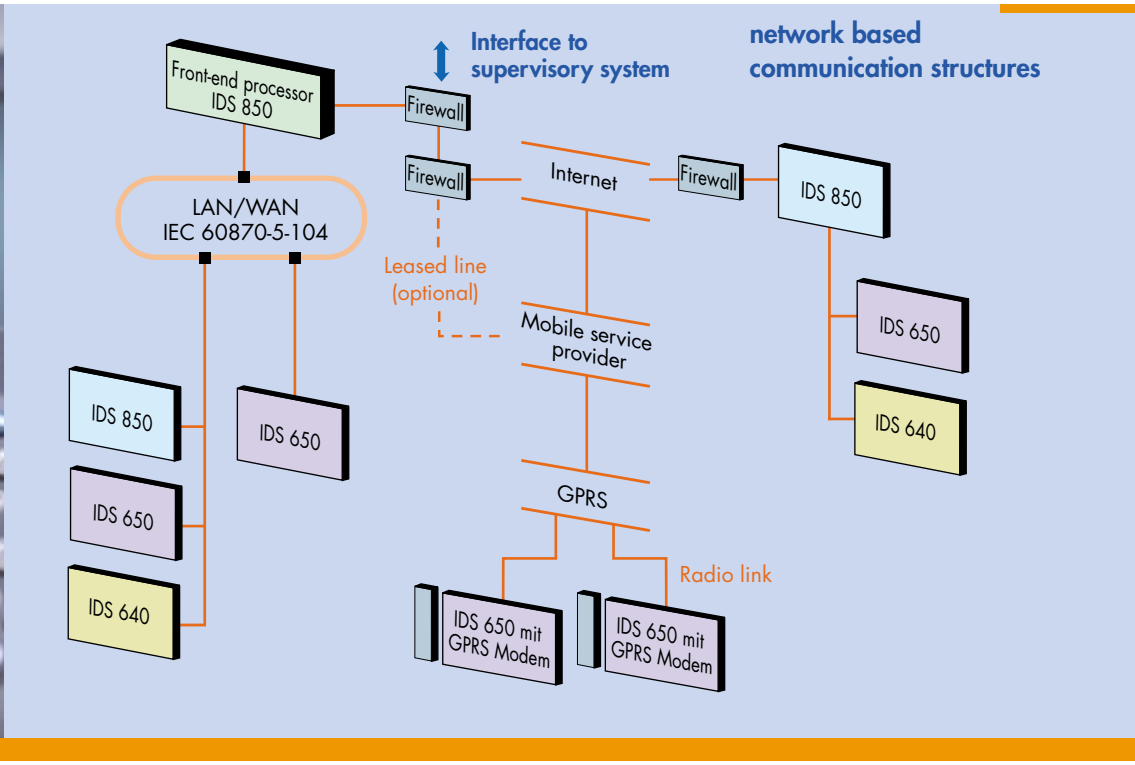
Besides the telemetry protocols IDS telecontrol and automation systems also support various field communication protocols. Protection devices can be connected via IEC 60870-5-103 protocol, intelligent process peripheral systems via the Modbus-RTU protocol. In order to connect peripheral units directly, IDS additionally supports Profibus DP and FMS protocols.



A LCD-terminal DI104 can be integrated in all systems for local display of operational data.

To ensure an optimum communication, IDS systems are characterized by special telemetry functionalities:

- Buffering of process information for dial-up and radio services, respectively in case of communication failure in fixed time intervals or event-driven.
- Realisation of multi-way communication (diversification) and use as communication node (master and sub-master unit)
- event-driven transmission of measured values with integrated general polling; alternatively cyclic measured value transmission
- event-driven transmission of status, commands and setpoints; adjustable transmission priorities



Engineering and Diagnosis

Configuration and parameterization of the entire IDS telemetry network can be done at superior positioned systems (sub-master station, master station) with the SCADA system IDS HIGH-LEIT.

The units can be commissioned either centralized via a graphic engineering tool or directly at site. The engineering tool offers various functions to make commissioning quick and easy and without special technological knowledge.

IDS telecontrol stations with simple connection to the telecontrol master station can be fully set into operation with just a few mouse clicks. All necessary settings are queried in clear dialogues and sent to the unit at a touch of a button.

Furthermore, the engineering tool provides extensive diagnostic functions. The telegram traffic can be monitored, recorded (tracing) and simulated. To ensure a comprehensive documentation of the system, also connection plans and test reports can be generated.

IDS telecontrol and automation units have integrated service functions for test purposes and self-diagnosis of all modules. The functional and status check is also possible via in-built LEDs. An internal watch-dog timer with potential-free contact monitors the functionality and system voltages. In case of failure an automatic restart is done.

Series Overview

IDS 850

The modular and freely scalable telecontrol and automation system IDS 850 combines compact dimensions with a robust industrial design. All components are integrated as pluggable modules into a metal housing. This installation-friendly solutions makes the IDS 850 a easy to configure and expandable system. The basic systems are suitable for direct installation in 19" racks and for wall mounting.

IDS 850 has the following characteristics:

- basic racks for the incorporation of a power supply module, a CPU and 5, 9 or 16 pluggable communication and/or I/O modules
- by cascading of several racks units with up to 2.048 I/Os can be realized
- process connection is done at the front via pluggable screw terminals
- function and status indication directly on the CPU module via LED
- command output modules (1, 1.5 and 2-pole) provide a 1 out of n check and can be optionally equipped with field loop check

IDS 650

The integration of all components into a metal housing provides a ready-to-use and installation friendly automation and telemetry unit IDS 650 in compact construction and robust industrial design. The unit is suitable for top-hat rail as well as wall mounting.

IDS 650 has the following special characteristic features:

- rack for incorporation of one power supply module, one CPU, one communication module and 4 or 8 I/O modules
- power supply module with different inputs and galvanic isolation of input and system voltages
- process connection at the module front via pluggable screw terminals
- function and status indication on an optional available intelligent display module via LED
- command output module (1, 1.5 or 2-pole)

IDS 640

The compact telecontrol and automation system IDS 640 offers a fixed signal and interface scale. The I/O amount is designed to cover monitoring, control and automation requirements of typical small-scale plants of the water, sewage, gas and electricity industries. The solid plastic housing is space-saving and suitable for top-hat rail mounting.

IDS 640 offers the following features:

- power supply module with galvanic isolation of input and system voltages
- process connection at bottom and top side via screw terminals
- function and status indication via LED

The IDS System technology stands for a concept which offers above all functionality and safety to the user. Universality with regard to communication and construction types with uniform software platform enable the construction of open and free scalable telecontrol, automation and communication networks. The integration of 3rd party equipment is easily possible at all levels and in all directions. The compatibility of the series IDS 850, IDS 650 and IDS 640 is granted within automation and telemetry networks and towards IDS HIGH-LEIT SCADA systems.

The IDS telecontrol and automation systems are designed for the utility industry, industrial infrastructure applications and transportation systems. Moreover, they are used as bay and station controllers at all voltage levels of electricity networks.

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Technical Data
Telecontrol and Automation Systems

IDS 850

Module type	Module designation	Module properties
Power supply modules	PS8HA	Power supply 110...230 V AC/DC
	PS8LB	Power supply 24...60 V DC
Central processing module	CU88A	Automation and communication; 4 x RS232; 1 x Ethernet (10/100 Base TX)
Communication modules	CC88A	Communication; 4 x RS232; 1 x Ethernet (10/100 Base-TX)
	CC86A	Communication; 4 x RS232
	OC88A	Fiber optic cable; 4 x FO interfaces; 1 x Ethernet (10/100 Base-TX or 100 Base-FX)
	OC86A	Fiber optic cable; 3 x FO interfaces
	EC86A	Ethernet Controller; 1 x Ethernet (10/100 Base-TX)
	PC86A	Profibus Controller (FMS/ DP); 1 x RS485
	FM81A	Leased-line modem; 50 Bit/s...1,200 bits/s; HD/VD
	DM81A	Dial-up modem, analog; max. 33,600 bits/s
I/O modules	DI85A	Digital input module, 32 inputs; 24...60 V DC; time stamp: 1 ms
	DI84A	Digital input module, 16 inputs; 24...230 V DC; time stamp: 10 ms
	DI84B	Digital input module, 16 inputs.; 24...230 V DC; time stamp: 1 ms
	DO85A	Digital output module, 32 outputs; 24…60 V DC, max. 200 mA
	DO84A	Digital output module, 16 outputs; 230 V; max. 6 A
	DO83B	Digital output module, 8 outputs; 230 V; 8 A
	CO83A	Command output module, High Power 8 outputs; 230 V; max. 1,000 VA
	CO83B	Command output module, High Power 8 outputs.; 230 V; max. 2,000 VA
	AI83A	Analog input module, 8 inputs; ±25 mA; resol.: 16 bits
	AI82A	Analog input module, 4 inputs; ±25 mA; resol.: 16 bits
	AI83B	Analog input module, 8 inputs; ±25 mA; resol.: 16 bits
	AO82A	Analog output module, 4 outputs; 0...20 mA; 4...20 mA or 0...24 mA; resolution: 12 bits
	CI84A	Counter input module, Low Frequency, 16 inputs; max. 25 Hz
	CI83A	Counter input module, Low Frequency, 8 inputs; max. 50 Hz
	CI83B	Counter input module, High Frequency, 8 inputs; max. 50 Hz; battery backed
	CI82A	Counter input module, High Frequency, 4 inputs; max. 5 kHz
	MS8AA	Measuring system; 100 V; 1 A, 2 A, 5 A; synchro-check
Mechanical design		Screening metal house for direct installation in cubicles Module rack 850A: 239 W x 266 H x 128 D mm Module rack 850B: 321 W x 266 H x 128 D mm Module rack 850C: 483 W x 266 H x 128 D mm Basic systems D/E/F/... for more than 18 communication or I/O modules by coupling several module racks
Ambient conditions		Ambient temperature -20° ... 70° C Air humidity < 95 % (non-condensing)
Insulation test acc. to IEC 60255-5		Power-frequency withstand voltage: 2.5 kV; 50 Hz; 1 min Surge voltage: 5 kV; 1.2/50 µs; 0.5 J
EMC (Electromagnetic compatibility)		Interference resistance acc. to EN 55024:1998/IEC 61326:2002 IEC 60870-2-1 levels 3 and 4 Emitted interference acc. to EN 55022:2000/IEC 61326:2002/IEC 60870-2-1 Class A Equipment safety acc. to IEC 61010-1

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IDS 650

Module type	Module designation	Module properties
Power supply modules	PS6HA PS6HB PS6LA	Power supply 230 V AC/DC Power supply 110 V DC Power supply 24...60 V DC
Central processing module	CU68A	Automation and communication; 2 x RS232; 1 x Ethernet (10/100 Base-TX)
Communication modules	CC68A OI62A FM61B DM61B	Communication; 2 x RS232/RS485; 1 x Ethernet (10/100 Base TX) Fiber optic cable; 2 x FO interface Leased-line modem; 150...1,200 bits/s; HD/VD Dial-up modem, analog; max. 33,600 bits/s
I/O modules	DI64A DI64B DO64A IO63A CO61A AI63A AO61A	Digital input module, 16 inputs; 24...230 V DC; time stamp 10 ms Digital input module, 16 inputs; 24...230 V DC; time stamp 1 ms Digital output module, 16 outputs; 230 V; max. 4 A Digital input/output module; 8 inp./4 outp.; 24...60 V DC; 230 V; max. 4 A Command input/output module; 8 inp.; 2 outp.; 24...230 V DC; max. 500 VA Analog input module; 8 inp.; ± 25 mA; resolution: 16 bits Analog output module; 2 outp.; 0...20 mA, 0...24 mA, 4...20 mA; resolution: 12 bits
Mechanical design		Screening metal housing for installation on top-hat rail Module rack 650A: 210 W x 120 H x 110 D mm Module rack 650B: 290 W x 120 H x 110 D mm
Ambient conditions		Ambient temperature -20° ... 70° C Air humidity <95% (non-condensing)
Insulation test acc. to IEC 60255-5		Power-frequency withstand voltage: 2.5 kV; 50 Hz; 1 min Surge voltage : 5 kV; 1.2 / 50 µs; 0.5 J
EMC (Electromagnetic compatibility)		Interference resistance acc. to EN 55024:1998/IEC 61326:2002 IEC 60870-2-1 levels 3 and 4 Emitted interference acc. to EN 55022:2000/IEC 61326:2002/IEC 60870-2-1 Class A Equipment safety acc. to IEC 61010-1

IDS 640

Module type	Module properties
Power supply	24...60 V DC or 230 V AC
Central processing module	Automation and communication
Communication interfaces	2 x RS232 1 x Ethernet
I/O modules	16 digital inputs, 24...60 V DC; time stamp: 10 ms 4 digital outputs, 24...60 V DC; max. 200 mA 4 analog inputs; ± 25 mA mA, 16-bit resolution.
Mechanical design	Robust plastic housing for installation on top-hat rail 70 W x 105 H x 115 D mm
Ambient conditions	Ambient temperature -20° ... 70° C Air humidity <95% (non-condensing)
Insulation test acc. to IEC 60255-5	Power-frequency withstand voltage: 2.5 kV; 50 Hz; 1 min Surge voltage : 5 kV; 1.2 / 50 µs; 0.5 J
EMC (Electromagnetic compatibility)	Interference resistance acc. to EN 55024:1998/IEC 61326:2002 IEC 60870-2-1 levels 3 and 4 Emitted interference acc. to EN 55022:2000/IEC 61326:2002/IEC 60870-2-1 Class A Equipment safety acc. to IEC 61010-1

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